

15 April 1963

Dear John:

Thank you for enlarging the test pattern images. We have measured the modulation of light transmitted through the enlargements and divided this modulation by the modulation of light transmitted through the original; the results, which will be effective transfer functions of the enlarging process, are shown in the table. Since we know nothing about the processing of the enlargements, these transfer characteristics include any enhancement that the film's gamma offers.

Spatial Frequency (cyc/mm)	Magnification		
	40	20	10
51	1.32-1.40	0.20-0.28	0.32-0.56
102	0-0.30	<.24	0.23-0.30
190	0-0.11	<.91	<.11

#### Effective Transfer Characteristic of Enlarger

40X is the best magnification and the transfer function is already very low at 100 cyc/mm. I estimate that the enlarger begins to lose information at 60 cyc/mm and should never be used with film having more than 80 cyc/mm.

The essential point to keep in mind here is that aerial negatives will have low modulation images at high spatial frequencies, thus, the fact that a 200 cyc/mm high contrast target will be enlarged does not mean that an aerial negative can be. In fact, virtually all of the information beyond 100 l/mm in a typical aerial negative would be lost in this enlarger.

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We are now quite well satisfied that an enlarger can be made for the kind of film soon to be generated. We will probably finish writing our proposal for this unit this week, and we would like to present it to you as soon thereafter as possible. Please let me know what would be a convenient time and way to do this.

Best regards

STAT

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cc: JP, ELT